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Conclusions.—The presence of *Uredineæ*, whose teleutospores germinate immediately after ripening, is not confined to certain families of Phanerogams, the *Liliaceæ*, *Gramineæ*, *Cyperaceæ*, and *Umbellifereæ* being the only families not represented among their hosts. Their presence does not seem to depend simply on the presence of host plants, but to be correlated with meteorological conditions. They are more abundant in high mountains and moist valleys, or on low land by rivers.—EFFIE A. SOUTHWORTH.

KELLERMAN AND SWINGLE. *Preliminary Report on Smut in Oats.*
Bulletin 8. Experiment Station, Kansas State Agricultural College, 1889.

There has long been no doubt that wheat may be infected with smut by dusting the grain with spores, or by sowing it in soil in which the spores already exist. Consequently since the spores can pass uninjured through the intestines of cattle, it becomes a dangerous matter to use manure from stock that have had access to straw of smutted wheat. Since this is true for wheat, the natural inference is that it is also true for oats and barley. This has been questioned, however, and in 1888 in an article, already reviewed in this JOURNAL, Mr. J. L. Jensen gave very conclusive proof that grains still included in the husks at the time of planting could not be infected by spores which came in contact merely with the exterior of the husks, and consequently that spores in the manure or in the soil could have no effect on the amount of smut in the crop.

In the Bulletin above mentioned Professor Kellerman and his assistant, Mr. W. T. Swingle, give a full account of further conclusive experiments in the same direction. They have also included in their experiments a comparison of the value of sulphur and iron compounds against hot water as a dressing for seed grain.

An experiment to artificially infect oats when in blossom failed, but other experiments clearly established that the spores must be in or sticking to the seed when planted. Experiments in planting seed treated in different ways in untreated soil and soil which had been artificially manured, or smutted, or both, gave the following results: Soaking the seed in a solution of iron sulphate ($1\frac{1}{2}$ pounds per gallon) did not materially decrease the amount of smut or injure the grain; soaking the seed in copper sulphate solution (4 ounces to 1 gallon) eighteen hours prevented smut but lessened the fertility of the seed; treating seed with hot water (132° F.) for fifteen minutes prevented smut and improved rather than diminished the germinating powers of the seed and vigor of the plants; soil which had been treated with manure and smut the previous August actually gave a less per cent. of smut than untreated soil; soaking the seed eighteen hours in a 5 per cent. solution of concentrated lye prevented smut, but injured the seed; soaking eighteen hours in a 3 per cent. solution of sulphuric acid did not pre-

vent smut, while a 10 per cent. solution prevented smut and greatly injured the seed.

Natural enemies of smut.—Five different natural enemies of smut are described. A white mold, probably some species of *Fusarium*; a black mold, a new species of *Macrosporium*; a bacterial disease; and two smut-eating beetles.

The bulletin also contains a few preliminary notes on stinking smut, announcing that experiments are already under way to determine the comparative value of different fungicides in this case also.—EFFIE A. SOUTHWORTH.

KELSEY, F. D. *Study of Montana Erysipheæ*. Botanical Gazette, Vol. XIV. No. 11, p. 285.

This paper, prepared by Mr. Kelsey, contains a number of interesting notes upon nine species of *Erysipheæ* of Montana, a number of rare hosts being cited, and one provisional new species, *Erysiphe sepulta*, E. & E. on *Bigelovia graveolens*. This species is, however, acknowledged to resemble *E. chicoracearum*, DC. quite closely, a species widely variable upon the many hosts which it inhabits.—DAVID G. FAIRCHILD.

L'ECLUSE, A. DE. *Traitement du Black Rot*. Rapport à M. le Ministre de l'Agriculture. Le Progrès Agricole, October 13, 1889.

The results contained in this short report to the French minister of agriculture, while they present nothing strikingly new in the matter of treatment of black-rot, may be of interest to vine-growers and others as coming from a foreign experimenter. The author theorizes in the first part of the report among other things upon the ability of the fungicidal solutions to penetrate the conceptacles of the black-rot upon the leaves, taking it for granted that the leaf-spot and black-rot of the berries are identical. He believes it consequently almost useless to spray the berries simply without destroying the sources of infection found in the fungus of the leaves, and counsels spraying all the green surfaces of the vine as well as the grape clusters themselves. This to be done at least before the middle of May.

The report of the author's field experiments, in which the common fungicides seem to have been largely used, contains no new points either in matter of apparatus or mixtures, and is somewhat complicated, certain unexpected variations being explained by the ungovernable conditions so abundant in such work. Without discussing the details of the investigations or questioning particularly whether he is authorized in drawing such broad conclusions from only one year's experiments, it may be well to state briefly the author's opinions: That the efficacy of the copper compounds against black-rot is indisputable; that the disrepute into which they have fallen is due solely to misdirected use of them; that their action is at the same time preventive and curative if spread uniformly upon all green parts of the vine; and that the crop